

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
26 January 2006 (26.01.2006)

PCT

(10) International Publication Number
WO 2006/009873 A1

(51) International Patent Classification⁷: **B05D 5/00**, 5/06

(21) International Application Number:
PCT/US2005/021534

(22) International Filing Date: 17 June 2005 (17.06.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/581,503 21 June 2004 (21.06.2004) US

(71) Applicant (for all designated States except US): **FERRO CORPORATION** [US/US]; 1000 Lakeside Avenue, Cleveland, OH 44114 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **SWILER, Daniel, R.** [US/US]; 1107 East National Pike, Washington, PA 15301 (US). **DETRIE, Terry, J.** [US/US]; 1686 Ridgewood Drive, Washington, PA 15301 (US). **GARDNER, Bertram, A.** [US/US]; 429 Jackson Drive, Apollo, PA 15613 (US). **KAPP, David, C.** [US/US]; 700 Westwood Drive, Gibbsonia, PA 15044 (US). **WEIR, Sean, T.** [US/US]; 648 Millers Run Road, Bridgeville, PA 15017 (US). **HARRIS, Ronald, M.** [US/US]; 505 The Hermitage Drive, Alpharetta, GA 30004 (US).

(74) Agent: **CLARK, Kenneth, A.**; Rankin, Hill, Porter & Clark LLP, 925 Euclid Avenue, Suite 700, Cleveland, OH 44115-1405 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHODS OF FORMING AND DETECTING NON-VISIBLE MARKS AND ARTICLES MARKED IN ACCORDANCE WITH THE METHODS

(57) Abstract: The present invention provides methods of forming and detecting non-visible marks and articles marked in accordance with the methods. In accordance with the methods of the invention, a marking material is applied to a substrate to form a mark that is contrastable from the substrate in one or more regions of the infrared portion of the electromagnetic spectrum. The mark is covered with a film, which can be a bonded coating or a non-bonded covering sheet, that comprises an amount of one or more inorganic pigments such that the film appears opaque in the visible portion of the electromagnetic spectrum but is sufficiently transmissive in one or more regions of the infrared portion of the electromagnetic spectrum to facilitate the detection of the mark covered by the film. The non-visible marks can be applied to articles such as automobile parts, aircraft parts and other articles of manufacture to deter counterfeiting.



WO 2006/009873 A1